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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/812,098	03/30/2004	Boguslaw Gajdeczko	1857.2430000	3089

26111 7590 06/05/2006

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EXAMINER	
BONANTO, GEORGE P	

ART UNIT	PAPER NUMBER
2855	

DATE MAILED: 06/05/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/812,098	GAJDECZKO ET AL.	
	Examiner	Art Unit	
	George P. Bonanto	2855	

-- The MAILING DATE of this communication appears on th cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1 and 3-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on *30 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1 and 3 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,543,831 to Meyer.

As to claim 1, Meyer discloses a pressure gauge comprising a diaphragm (diaphragm 3; Fig. 1) positioned within a body (pressure transducer 1; Fig. 1) having a rigid outer portion coupled to an inner wall of the body and a displaceable semi-elastic inner portion coupled to the rigid outer portion (outer portion is fixed to transducer and is thus rigid, central portion is elastic; col. 2) the inner portion being sensitive to pressure changes in a range of approximately 0.1 to 0.5 inches of water (while the range of pressure changes is not specifically disclosed, the claim limitation, interpreted broadly, does not any particular degree of deflection or output signal, thus is met by any diaphragm exposed to pressure changes in the claimed range) and which displaces in response to a pressure difference between first and second sides of the diaphragm (cols 2 and 3) a sensor located proximate to the diaphragm and adapted to sense the displacement of the diaphragm inner portion (receivers 15 or 16; Fig. 1) and a monitor and control system coupled to the sensor and adapted to determine the pressure difference from the displacement of the diaphragm (amplifiers 17 and 18 and evaluation circuit 19; Fig. 1).

As to claim 3, Meyer further discloses an optically reflective coating on a first side of the diaphragm inner portion (col. 2) wherein the sensor includes an optical transmitter and receiver optically aligned with the optically reflective coating (transmitter 14 and receivers 15 and 16 aligned by light conductors 10-13 with reflective coating on diaphragm 3; Fig. 1).

Claims 12 and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,550,592 to Deschape.

As to claim 12, Deschape discloses a proximity sensor comprising a measurement leg having a measurement probe coupled thereto, the measurement probe located proximate a measurement surface (branch passageways 28 and 32 and nozzle 40 proximate workpiece surface, Fig. 1 and col. 1) a reference pressure (pressure in passageway-pressure chamber 30, Fig. 1, col. 3 lines 65-68) a bridge portion coupled between the measurement leg and the reference pressure (differential pressure transducer 44, Fig. 1) a diaphragm disposed within the bridge portion, the diaphragm including a rigid outer portion and a displaceable inner portion that displaces in response to a pressure difference between the measurement leg and the reference pressure caused by a change in distance between the measurement probe and the measurement surface (differential pressure transducer 44, Fig. 1 and col. 1) a sensor located proximate to the diaphragm and adapted to sense the displacement of the diaphragm inner portion (col. 3 lines 53-68) and a monitor and control system coupled to the sensor and adapted to determine the displacement of the diaphragm and to determine the pressure difference from the displacement (col. 3 lines 53-68). Deschape fails, however, to explicitly disclose that the

As to claim 13, Deschape discloses a measurement leg having a measurement probe coupled thereto, the measurement probe located proximate a measurement surface (branch

passageways 28 and 32 and nozzle 40 proximate workpiece surface, Fig. 1 and col. 1) a reference pressure (pressure in passageway-pressure chamber 30, Fig. 1, col. 3 lines 65-68) a bridge portion coupled between the measurement leg and the reference pressure caused by a change in distance between the measurement probe and the measurement surface (differential pressure transducer 44, Fig. 1 and col. 1) a diaphragm disposed within the bridge portion, the diaphragm including a rigid outer portion and a displaceable inner portion that displaces in response to a pressure difference between the measurement leg and the reference pressure (differential pressure transducer 44, Fig. 1) a sensor located proximate to the diaphragm and adapted to sense the displacement of the diaphragm inner portion (col. 3 lines 53-68) and a monitor and control system coupled to the sensor and adapted to determine the displacement of the diaphragm and to determine the pressure difference from the displacement (col. 3 lines 53-68).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 4-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,543,831 to Meyer, as applied to claim 3 above, in view of U.S. Patent No. 6,496,265 to Duncan et al.

As to claim 4, Meyer fails to explicitly disclose that the sensor comprises an interferometer.

Duncan et al disclose sensor comprising a diaphragm having a rigid outer portion and a displaceable semi-elastic inner portion, the inner portion displaces in response to a pressure difference between first and second sides of the diaphragm (Figs. 28a and 28b and col. 8 line 65 to col. 9 line 44) a sensor located proximate to the diaphragm and adapted to sense the displacement of the diaphragm inner portion (CCD array coupled to diaphragm by fiber, Col. 5 lines 19-38) and a monitor and control system coupled to the sensor and adapted to determine the pressure difference from the displacement of the diaphragm (DSP, col. 5 lines 39-50) wherein the sensor comprises an interferometer (col. 5 lines 19-20).

It would have been obvious to one of ordinary skill in the art to modify the sensor of Meyer by using the interferometer arrangement of Duncan et al. in order to eliminate the need for separate receiver-side light conductors.

As to claim 5, Duncan et al. further disclose that the sensor comprises a white light interferometer (col. 5 lines 19-20).

As to claim 6, Duncan et al. further disclose that the sensor comprises a light transmitting module (col. 5. line 22) a light sensing module (col. 5 lines 39-46) adapted to directly receive a first light beam transmitted from the light transmitting module and to receive a second light beam transmitted from the light transmitting module and reflected back from the diaphragm (col. 5, lines 23-27) wherein the monitor and control system calculates the displacement of the diaphragm from an interference pattern generated from the first and second lights (col. 5 lines 35-50).

As to claim 7, Duncan et al. further disclose that the light transmitting module comprises a transmitting fiber (col. 5, lines 22-23) having an output coupled to a diffraction device that

separates a source light into the first and second lights (col. 5, lines 35-38) wherein changes in the diaphragm displacement cause the interference pattern to include intensity modulated light (col. 5 lines 39-46) wherein the monitor and control system calculates the diaphragm displacement from the intensity modulated light (col. 5 lines 46-50).

Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,543,831 to Meyer and U.S. Patent No. 6,496,265 to Duncan et al., as applied to claim 6 above, further in view of U.S. Patent No. 5,880,841 to Marron et al.

As to claim 8, Duncan et al. further disclose that the light transmitting module comprises a transmitting fiber (fiber, Figs. 28a and 28b) outputting a first light at a first wavelength (LED at 850 nm, col.2 lines (10-12) wherein changes in the diaphragm displacement cause the interference pattern to change wherein the monitor and control system comprises a counter that decode the diaphragm displacement (col. 5, lines 39-50).

Duncan et al. fail to disclose that the light transmitting module comprises a second transmitting fiber outputting a second light at a second wavelength wherein the second wavelength is shifted relative to the first wavelength wherein changes in the diaphragm displacement cause the interference pattern to change with a substantially constant speed, wherein the monitor and control system comprises a counter that decodes the diaphragm displacement from the substantially constant speed.

Marron et al. disclose that the light transmitting module comprises a first light at a first wavelength and a second light at a second wavelength (plurality of lasers, Fig 1 and col. 5 lines 8-12) wherein the second wavelength is phase shifted relative to the first wavelength (col. 5, lines 2-7) wherein changes in the surface topography of an object causes the interference pattern

to change (col. 4, line 58 to col. 5, line 13) wherein the monitor and control system decodes the height of the surface topography from the interference pattern changes.

It would have been obvious to one of ordinary skill in the art to modify the pressure gauge of Duncan et al. by adding the phase shifted second light having a second wavelength of Marron et al. in order to overcome the ambiguity associated with a single wavelength displacement measuring system (displacements differing by an even number of wavelengths are indistinguishable, col. 1, lines 21-32).

Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,543,831 to Meyer, as applied to claim 1 above, in view of U.S. Patent No. 6,105,436 to Lischer et al.

As to claim 9, Meyer fails to explicitly disclose that the inner portion of the diaphragm includes a grounded metallic surface wherein the sensor includes a capacitive sensing device positioned adjacent to the grounded metallic surface and wherein the monitor and control system determines the displacement based on capacitive changes in the capacitive sensing device.

Lischer et al. disclose that the inner portion of the diaphragm includes a grounded metallic surface (diaphragm 120 is grounded, col. 4, lines 16-23) wherein the sensor includes a capacitive sensing device positioned adjacent to the grounded metallic surface and wherein the monitor and control system determines the displacement based on capacitive changes in the capacitive sensing device (col. 4, lines 24-45).

It would have been obvious to one of ordinary skill in the art to modify the pressure gauge of Meyer by including the capacitive sensing device of Lischer et al. in order to improve stability, repeatability, and tolerance to overpressure (Lischer et al. col. 6, lines 40-44).

Claims 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,550,592 to Deschape in view of U.S. Patent No. 4,953,388 to Barada.

As to claim 10, Deschape discloses a proximity sensor comprising a measurement leg having a measurement probe coupled thereto (branch passageways 28 and 32 and nozzle 40, Fig. 2) a reference leg having a reference probe coupled thereto (branch passageways 26 and 30 and nozzle 40', Fig. 2) a bridge portion coupled between the measurement leg and the reference leg (differential pressure transducer 44, Fig. 2) and a diaphragm pressure sensor disposed within the bridge portion (differential pressure transducer 44, Fig. 2 and cols. 3 and 4). Deschape fails, however, to explicitly disclose that the reference probe is located proximate a reference surface and that the diaphragm pressure sensor detects changes in pressure in the measurement leg caused by a change in distance between the measurement probe and a measurement surface as compared to a distance between the reference probe and the reference surface.

Barada discloses a reference probe that is located proximate a reference surface and a sensor that detects changes caused by a change in distance between the measurement probe and a measurement surface as compared to a distance between the reference probe and the reference surface (Fog. 1 and cols. 2-4).

It would have been obvious to one of ordinary skill in the art to modify the reference leg of Deschape by using the reference surface of Barada in order to compare a surface to a reference surface (Barada; cols. 1-2) and in order to reduce pneumatic noise by providing laminar and incompressible fluid flow in the reference leg; Barada, col. 3).

As to claim 11, Deschape further discloses that the pressure sensor comprises a diaphragm having a rigid outer portion and a displaceable inner portion that displaces in response

to a pressure difference between the measurement leg and the reference leg (col. 3 lines 53-68) a sensor located proximate to the diaphragm and adapted to determine the displacement of the diaphragm inner portion (col. 3 lines 53-68) and a monitor and control system coupled to the sensor and adapted to determine the displacement of the diaphragm and adapted to determine the pressure difference from the displacement (col. 3 lines 53-68).

Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,543,831 to Meyer, as applied to claim 1 above, and further in view of U.S. Patent No. 4,869,282 to Sittler et al.

As to claim 14, Meyer fails to explicitly disclose that the semi-elastic inner portion comprises a polyimide film.

Sittler et al. disclose a diaphragm that comprises a polyimide film (col. 6, lines 25-30).

It would have been obvious to one of ordinary skill in the art to modify the pressure gauge of Meyer by making the diaphragm out of Kapton as taught by Sittler et al. in order to make the diaphragm durable (Sittler et al. col. 6, line 30).

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,543,831 to Meyer, as applied to claim 1 above, and further in view of U.S. Patent No. 5,570,428 to Madaffari et al.

As to claim 15, Meyer fails to explicitly disclose that the semi-elastic inner portion comprises a thin polyester film.

Madaffari et al. disclose a diaphragm that comprises a thin polyester film (col. 3, lines 34-36).

It would have been obvious to one of ordinary skill in the art to modify the pressure gauge of Meyer by making the diaphragm out of Mylar as taught by Sittler et al. in order to improve the linearity of the deflection of the diaphragm (Madaffari et al., col. 2, lines 4-6).

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,543,831 to Meyer, as applied to claim 1 above, and further in view of U.S. Patent No. 5,281,782 to Conatser.

As to claim 16, Meyer fails to explicitly disclose that the semi-elastic inner portion comprises rubber.

Conatser discloses a diaphragm that comprises rubber (col. 5, lines 11-12).

It would have been obvious to one of ordinary skill in the art to modify the pressure gauge of Meyer by making the diaphragm out of rubber in order to save cost (Conatser, col. 2, lines 27-31).

Response to Arguments

Applicant's arguments filed 3/28/2006 have been fully considered but they are not persuasive.

At page 14, Applicants argue that Conatser "teaches away" from using rubber because "rubber corrode[s] too easily." This argument is not persuasive because the rubber diaphragm is not at any risk or corrosion in the environment of Meyer and further is unpersuasive because even if not ideal, Conatser clearly discloses that rubber is an adequate material for a diaphragm and any detriments associated with its use, such as weakness to corrosion, may be offset by other advantages, such as low cost, such that it would have been obvious to one of ordinary skill in the art to use the rubber diaphragm of Conatser.

Applicant's arguments with respect to claims 1-15 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. U.S. Patent Nos. 4,521,683, 4,270,560 and 5,252,826 and Published U.S. Application No. 2002/0011114 disclose various diaphragm pressure sensors and arrangements.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George P. Bonanto whose telephone number is (571) 272-2182. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Lefkowitz can be reached on (571) 272-2180. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

GPB
16 May 2006

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